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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,175	12/20/2001	Anthony Schepis	7270	9736

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EXAMINER

SAVAGE, MATTHEW O

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/027,175

Applicant(s)

SCHEPIS, ANTHONY

Examiner

Matthew O Savage

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)  
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_. 6) ☐ Other: \_\_\_\_\_

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following must be shown or the feature(s) canceled from the claim(s):

The hub outer perimeter fitted within each disc central radial opening and having a plurality of apertures formed therein recited in claim 5. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Concerning line 10 of claim 6, it is unclear as to whether or not "a shaft" is the same as that recited on line 33. Concerning lines 9 and 15, it is unclear as to whether or not "a hollow interior" and "a disc interior" refer to the same spaces. On lines 16-17, "the longitudinal axis of the shaft" lacks antecedence. Concerning lines 25-26, "the shaft cylindrical wall" lacks antecedence. Regarding lines 26, the location/relation of the impervious first and second surfaces with respect to the "necks" and "surface about the central opening" is unclear. Concerning lines 35 and 36, it is unclear as to whether or

not "an elongated, longitudinal shaft axis" is the same or different from "the longitudinal axis of the shaft" recited on lines 16-17. On line 43, "the shaft side wall" lacks antecedence. On line 45, "the vessel" lacks antecedence. On line 46, "the vessel vertical axis" lacks antecedence.

Concerning claim 12, "said porous disc material" lacks antecedent basis.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yuichi et al in view of Okada, McKay, SU 591,203, JA181,503, and Tuit.

With respect to claim 6, Yuichi et al disclose a high shear rotating disc filter assembly (see FIGS. 1 and 11) in a filtering system for filtering a slurry comprised of liquid and very small particles (see lines 6-12 of col. 1) having a feed tank 4 with a slurry output means (e.g., the pipe and pump 6 connected to the bottom of the tank 4 which is equivalent to the pipe and pump 26 shown in FIG. 1 of the instant application), a slurry recycle means (e.g., the pipe connected to the outlet 8 of the filter shown in FIG. 1 that is considered equivalent to the pipe 14 shown in FIG. 1 of the instant application), a liquid tight vessel 7 enclosing the disc filter and a portion of a shaft 44 holding the disc,

the vessel being connected to the feed tank slurry output means, and the feed tank having an output means connected to the feed tank slurry recycle input means (e.g., via the tank). Yuichi et al fail to specify slurry input means for the feed tank. Okada discloses that it is known in the filtration art to provide slurry input means for a mixing tank (e.g., the pipe 26 transporting liquid to be filtered into the upper open end of the tank 27 shown in FIG. 1, which is considered equivalent to the pipe arrangement 12 shown in instant FIG. 1) and suggests that such an arrangement is easy and inexpensive to construct by avoiding pressurized connections in the tank sidewall. It would have been obvious to have modified the system of Yuichi et al so as to have included a slurry input means as suggested by Okada in order to provide an mixing tank arrangement that was easy and inexpensive to construct. Yuichi et al and Okada fail to specify the recited receiver tank and vacuum pump. McKay discloses that it is known to provide a receiver tank 31 and vacuum pump 34 for a rotating disk filter and suggests that such an arrangement enables removal of gas from the filtrate. It would have been obvious to have modified the combination of Yuichi et al and Okada so as to have included a receiver tank and vacuum pump as suggested by McKay in order to enable the removal of gas from the filtrate. Yuichi et al, Okada, and McKay fail to specify a filter having a plurality of discs. SU '203 discloses a filter including a plurality of rotating discs 14 constructed of a porous material, each disc having a hollow interior, each disc being mounted on an elongated shaft 9, each disc as having a round outer perimeter, a central radial opening, first and second opposite surfaces 12, 13, the outer perimeter defining a disc radial plane, the surfaces, perimeter, and central opening defining a disc

interior, the radial plane being perpendicular to the longitudinal axis of the shaft 9, the disc interior opening onto the central opening, the shaft having a hollow interior and having first and second ends defining an elongated shaft axis, one end of the shaft being connected to a rotational drive means located outside the filter vessel, the shaft 9 as being defined by a cylindrical wall (see FIG. 2) with an elongated slot 10 formed therein opening into the shaft hollow interior, the elongated slot having a longitudinal axis parallel with the longitudinal axis of the shaft, the drive means being considered equivalent to the drive means 59 shown in FIG. 1 of the instant drawing Figures, the shaft having an elongated slot 10 opening into the shaft hollow interior and into the disc interior, and suggests that such a filter has an increased filtration capacity due to the inclusion of a plurality of disk filters, a vessel having a top (e.g., an upper third of the vessel wall 1), a bottom (e.g., a lower third of the vessel wall 1), and a side wall (e.g., the middle third of the vessel) extending vertically upward from the bottom to the top, the bottom, top, and side wall defining an vessel interior, the vessel top and bottom defining a vessel vertical axis, the portion of the shaft holding the discs being positioned within the vessel to the shaft longitudinal axis is perpendicular to the vessel vertical axis, the slurry being pumped from the vessel inlet 7 located at the vessel bottom and being fed continuously to affect an overflow at the top of the vessel at a recycle outlet 8, and JA '503 discloses the elongated shaft 22 as protruding through the side wall (see FIG. 2). It would have been obvious to have modified the combination suggested by Yuichi et al, Okada, and McKay so as to have included the filter arrangement as suggested by SU '203 in order to increase the filtration capacity of the filter. While SU '203 fails to

specify a plurality of elongated slots 10, the provision of additional slots would have been obvious in order to provide an increased/multiplied outlet area for the filtrate (see St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7<sup>th</sup> Cir. 1977)). Yuichi et al, Okada, McKay, and SU '203 fail to specify a first end of the shaft as being connected to a rotation drive means and the second end being connected to an outlet leading to the vacuum pump. JA 181,503 discloses the concept of providing a rotating disc filter with an elongated shaft having a first end connected to a rotation drive means 29 and the second end being connected to an outlet 4 (see FIG. 1, and the horizontal embodiment shown in FIG. 2)) and suggests that such an arrangement is easy and inexpensive to construct. It would have been obvious to have modified the system suggested by Yuichi et al, Okada, McKay, and SU '203 so as to have included the shaft arrangement as suggested by JA '503 in order to provide a shaft that was simple and inexpensive to construct. Yuichi et al, Okada, McKay, SU 591,203, and JA '503 disclose hollow discs but fail to specify the details of the disc shaped hub insert. Tuit discloses an analogous system including a hollow discs each having a disc shaped hub insert 11 with an outer perimeter fitted to and within each disc central radial opening, the hub perimeter having apertures 15 formed therein establishing an opening between the disc interior and hub interior, each hub having a central radial opening adapted to be fitted on the shaft cylindrical wall, each hub having impervious first and second surfaces (e.g., the radially outer surfaces adjacent to walls of the filter disc), the surfaces, perimeter, and central opening defining a hollow hub interior 18, each hub insert as having a central neck formed on each surface about the central opening, the necks adapted to fit against an

adjacent hub. Tuit suggests that such a hub design improves the seal between adjacent discs and between the discs and the shaft. It would have been obvious to have modified the combination suggested by Yuichi et al, Okada, McKay, SU 591,203, and JA '503 so as to have included the hub as suggested by Tuit in order to provide an improved seal between adjacent discs and between the discs and the shaft.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuichi et al in view of Okada, McKay, SU 591,203, JA181,503, and Tuit as applied to claim 6 above, and further in view of Hedges et al.

With respect to claim 7, Okada, McKay, SU 591,203, JA181,503, and Tuit fail to specify an elastomeric seal installed between each abutting neck to insure liquid tight junctions. Hedges et al disclose an analogous filter including an elastomeric seal 26 between each abutting hub neck to ensure liquid tight junctions there between. It would have been obvious to have modified the combination suggested by Okada, McKay, SU 591,203, JA181,503, and Tuit so as to have included elastomeric seals between each abutting hub neck in order to ensure liquid tight junctions therebetween.

As to claim 8, Hedges et al disclose a shaft cylindrical wall having an elongated flat surface strip parallel to the longitudinal axis of the shaft (e.g., formed by the slot receiving key 25), each hub insert having a flat portion corresponding to the shaft elongated flat surface strip (e.g., defined by the key).

Concerning claim 9, Hedges et al disclose special seals 5 installed about the shaft wall where the shaft protrudes through the side wall of the vessel.



Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yuichi et al in view of Okada, McKay, SU 591,203, JA181,503, Tuit, and Hedges et al as applied to claim 9 above, and further in view of Miller, Jr. et al.

Okada, McKay, SU 591,203, JA181,503, Tuit, and Hedges et al fail to specify fail to specify the diffuser plug. Miller, Jr. et al disclose the concept of providing a diffuser plug installed at the inlet entry 2 of a filter vessel to evenly dispose the prefilter across a filter 18. It would have been obvious to have modified the combination suggested by Okada, McKay, SU 591,203, JA181,503, Tuit, and Hedges et al so as to have included a diffuser plug as suggested by Miller, Jr. et al in order to provide a means to evenly dispose the prefilter flow across the filter.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuichi et al in view of Okada, McKay, SU 591,203, JA181,503, Tuit, Hedges et al, and Miller, Jr. et al as applied to claim 10 above, and further in view of Ahlberg, Jr. et al.

With respect to claim 11, Okada, McKay, SU 591,203, JA181,503, Tuit, Hedges et al, and Miller, Jr. et al fail to specify the tapered filter disc structure. Ahlberg, Jr. et al disclose an analogous filter including filter discs that are tapered with a greater separation between surfaces adjacent the central opening than at the outer perimeter and suggests that such an arrangement is capable of withstanding high rotational speeds (see lines 22-32 of col. 4). It would have been obvious to have modified the combination suggested by Okada, McKay, SU 591,203, JA181,503, Tuit, Hedges et al,

and Miller, Jr. et al so as to have included the tapered filter disc structure suggested by Ahlberg, Jr. et al in order to provide a filter disc capable of withstanding high rotational speeds.

Concerning claim 12, Ahlberg, Jr. et al disclose porous disc material in the form of sintered metal (see line 67 of col. 2).

Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yuichi et al in view of Okada, McKay, SU 591,203, JA181,503, Tuit, Hedges et al, Miller, Jr. et al, and Ahlberg, Jr. et al as applied to claim 10 above, and further in view of Geldmacher.

Okada, McKay, SU 591,203, JA181,503, Tuit, Hedges et al, Miller, Jr. et al, and Ahlberg, Jr. et al fail to specify disc porous material that is ceramic with finely structured openings. Geldmacher et al discloses an analogous filter including a porous ceramic material with finely structured openings (see lines 23-30 of col. 6) and suggests that such a material provides a filter fineness of .5-50 microns. It would have been obvious to have modified the combination suggested by Okada, McKay, SU 591,203, JA181,503, Tuit, Hedges et al, Miller, Jr. et al, and Ahlberg, Jr. et al so as to have included the porous ceramic material as suggested by Geldmacher in order to provide a filter fineness from .5-50 microns.

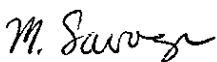
The proposed drawing corrections filed on 9-17-03 have not been approved since the apertures 79 have not been clearly shown.

This office action includes new grounds for rejection. Accordingly, This action has been made non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew O Savage whose telephone number is (571) 272-1146. The examiner can normally be reached on Monday-Friday, 6:00am-2:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda W. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1101.

  
Matthew O Savage  
Primary Examiner  
Art Unit 1723

mos  
Wednesday, December 31, 2003